

# Datasheet

## Sentinel Sonar Head

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**The Sentinel Sonar Head comprises a combined transmit and receive transducer array along with the required electronics to transfer raw data to the Sentinel Sonar Processor (Type 8161-002-001).**

The Sonar Head has a wide bandwidth transmission capability, centred by default on 70 kHz with a bandwidth in excess of 20 kHz. Source level for the default transmission is 206 dB re 1  $\mu$ Pa @ 1 m with FM pulse lengths up to 40 ms. Eight separate 45° transmit sectors are used, which are individually addressable, allowing any segment to be disabled to reduced nuisance acoustic returns from close in objects such as harbour walls or jetties.

The transmitters themselves are fully programmable and supplied with a number of frequency modulated Doppler tolerant pulses that can be selected via the Sentinel system configuration file.

The compact high-bandwidth transducer array has 128 separately wired elements, which are used to form 256 receive beams equispaced at 1.4°. Tracking software further interpolates these beams to provide highly accurate bearing estimation for the target.

The sonar head also contains the electronics to digitise, baseband, and multiplex the signals received by the transducer, along with control and monitoring software that performs periodic built-in-testing to verify the health of the transducer elements and front-end electronics.

Efficient electronics and transducer arrays result in a total power budget of less than 70 W.

Data is transferred to the surface via 65 m copper. For greater distances a hybrid power/fibre cable is used.

An attitude and heading reference sensor is included in the sonar to enable compensation for orientation and motion.

This allows the sonar to be mounted either way up or cable suspended.

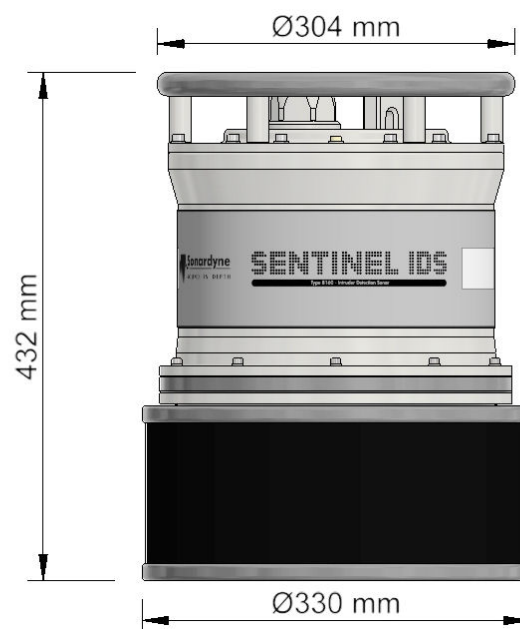
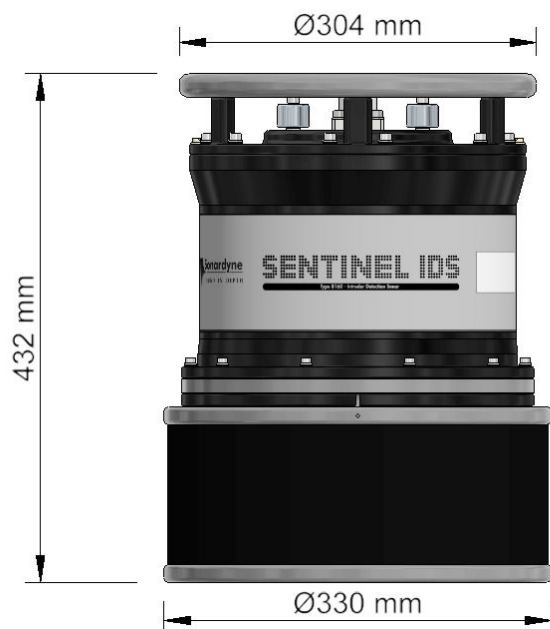
The Sentinel Sonar Head is available in both a lightweight aluminium housing (suitable for expeditionary use) and in a super-duplex housing for permanent installations.

### Key Features

- Environmentally friendly low 206 dB re 1  $\mu$ Pa @ 1 m source level
- Operating power of <70 W
- Available in aluminium or super-duplex housings
- High bandwidth arrays
- Separately addressable 45° transmit sectors
- Integrated attitude and heading reference sensor

# Specifications

## Sentinel Sonar Head



Feature		Type 8160-000-01 Expeditionary Model	Type 8160-000-02 Long Immersion Model
Acoustic	Operational Frequency	70 kHz	70 kHz
	Bandwidth	20 kHz	20 kHz
	Source Level (dB re 1 $\mu$ Pa @ 1 m)	206 dB	206 dB
	Pulse Length	40 ms	40 ms
	Receive Beams	256	256
Performance	Detection Range (Scuba Diver)	Radius 1000 m <sup>1</sup>	Radius 1000 m
	Acoustic Cover	360°	360°
	Target Bearing Accuracy	Down to 0.35°	Down to 0.35°
	Target Position Accuracy	<1 m at 150 m range	<1 m at 150 m range
Electrical	Voltage	55–0–55 V ac	55–0–55 V ac
	Power	Maximum 70 W	Maximum 70 W
Communication		Cat6 Ethernet	Cat6 Ethernet
Environmental (Depth Rating)		50 m	50 m
Mechanical Construction		Aluminium alloy, PVC and PU	Super duplex, PVC and PU
Dimensions (Length x Diameter)		432 x 330 mm (17 x 12")	432 x 330 mm (17 x 12")
Weight in Air/Water		35/6 kg (77/13.5 lb)	45.5/18 kg (100/40 lb)

<sup>1</sup> Represents maximum proven detection range.