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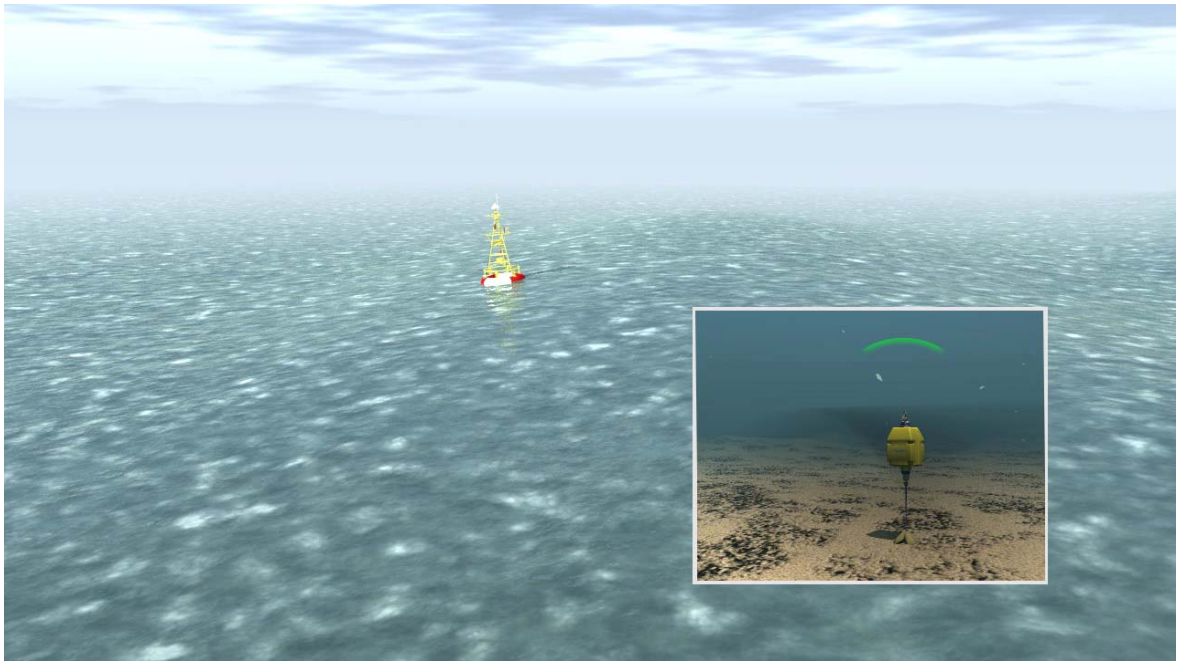
Datasheet

Tsunami Detection System



Description

The Tsunami Detection System can be deployed on the seabed in the deep ocean from where it will monitor the pressure of the water above it. A tsunami wave in deep water creates a small but measurable change in pressure that will be maintained for as long as twenty minutes. By monitoring any such changes, the subsea detector will trigger an alarm that sends an acoustic warning message to a buoy-mounted transceiver on the surface. The transceiver, in turn, relays the message via a satellite data link to a control centre.

Sonardyne's tsunami system is based on the company's successful Compatt 5 seabed acoustic transponder. It uses the latest Wideband™ digital acoustic technology to provide robust through water communications in difficult acoustic conditions.

The Compatt 5 may be deployed in water up to 7,000 metres and it is fitted with a sensor that continuously monitors water pressure, saving data every fifteen minutes. Because a reliable early warning of a tsunami can only be obtained close to the sea floor, the Compatt provides the essential means of sending these readings up to the surface.

Every hour the Compatt converts the pressure readings into signals which it transmits acoustically to the buoy on the surface. The satellite communications transceiver on the buoy then automatically forwards the pressure readings to the tsunami monitoring agency ashore. The system can also receive data from the central control so that revised monitoring parameters can be downloaded to the Compatt if required.

The Compatt is programmed to anticipate continual changes in the pressure of the water as these can be caused by influences such as tides, weather conditions and temperature. Because such changes can be predicted, a variation of as little as 3cm from the expected pattern will switch the device into Tsunami Alert Mode. This will cause the Compatt to immediately transmit any data that has been saved during the past hour to the surface. It will then take pressure readings every fifteen seconds which it will immediately send up to the buoy for transmission by satellite to the monitoring station.

This means that the first warning of a tsunami, caused by a small variation in water pressure on the seabed thousands of miles from shore, can be in the office of the monitoring organisation within minutes.

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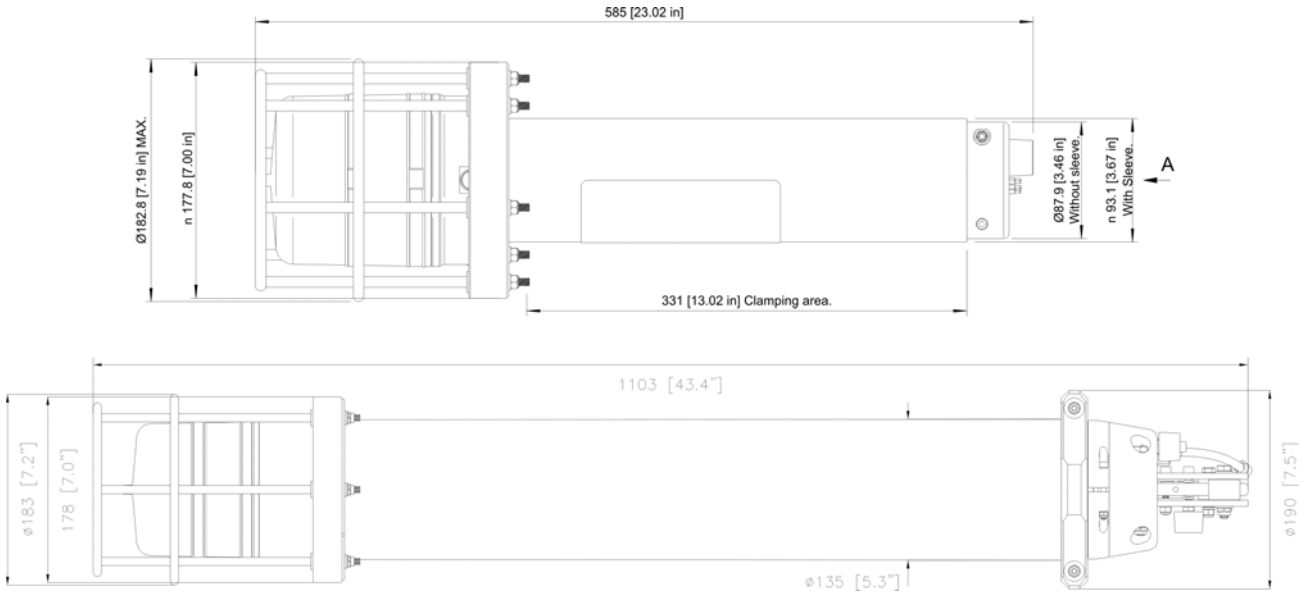
Specifications
Tsunami Detection System



Features	Type 8141 Buoy Mounted Transceiver
Frequency Band	LMF (14-19kHz)
Transducer Beamshape	Directional
Transmit Source Level (dB re 1 µPa @1m)	196 dB
Receive Sensitivity (dB re 1µPa)	95-130dB
Telemetry Robust Wideband™	1,500 baud (>600 baud user payload) bi-directional
Sonardyne Messaging Service data buffer	128 Bytes
Command/Control	Accessed through communications interface
Error Detection & Correction	Advanced protocols to minimise data loss and re-sends.
Communications Interface	RS232/485 (9,600–115,200 baud) with hardware handshake
Dimensions (LxDia)	585mm x 183mm
Weight in Air / Water	9.75kg / 5.26kg
External power requirement	24-50 Volts dc

Features	Type 8106 Compatt 5 Seabed Tsunameter
Depth Rating	5,000 metres (7,000m option)
Frequency Band	LMF (14–19kHz)
Transducer Beamshape	Directional
Transmit Source Level (dB re 1µPa @ 1m)	187-197dB (3 Levels)
Receive Sensitivity (dB re1µPa)	85-120dB (4 Levels)
Telemetry Robust Wideband™	1,500 baud (>600 baud user payload) bi-directional
Battery Life (Monitoring)	683 days
Safe Working Release Load (4:1)	250kg
Dimensions (LxDia)	1103mm x 135mm
Weight In Air / Water	28.2kg / 14.2kg
Pressure sensor	7,000 metres (4,000m option)