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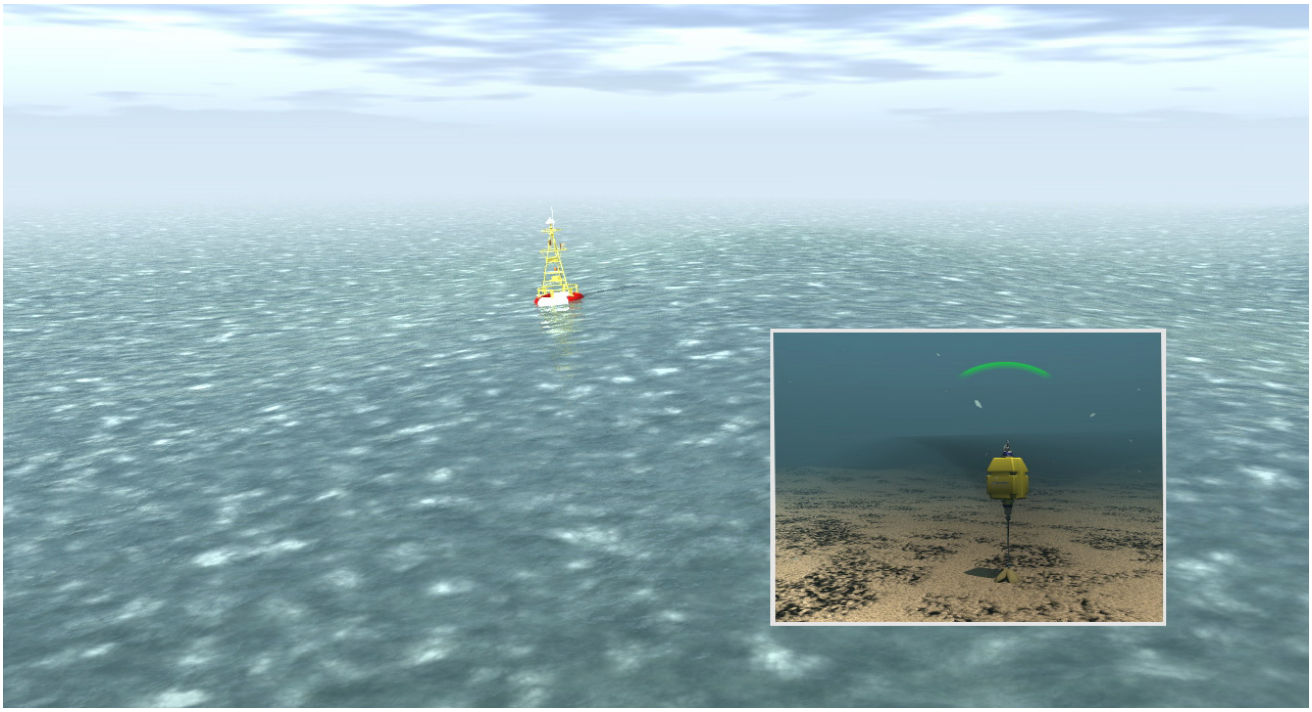
Datasheet

6G 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 6 seabed acoustic transponder. It uses the latest Wideband®2 digital acoustic technology to provide robust through-water communications in difficult acoustic conditions.

The Bottom Pressure Recorder 6 can be deployed in up to 7,000 metres of water and it is fitted with a sensor that continuously monitors water pressure, saving data every fifteen seconds. Because a reliable early warning of a tsunami can only be obtained close to the sea floor, the BPR6 provides the essential means of sending these readings up to the surface.

Every hour the BPR6 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 BPR6 if required.

The BPR6 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 3 cm from the expected pattern will switch the device into Tsunami Alert Mode. This will cause the BPR6 to transmit a sequence of messages containing hi-res pressure data to the surface over the next few hours. The transceiver on the buoy will immediately pass on the messages for transmission by satellite to the monitoring station.

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

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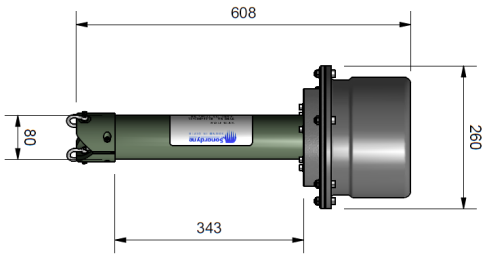
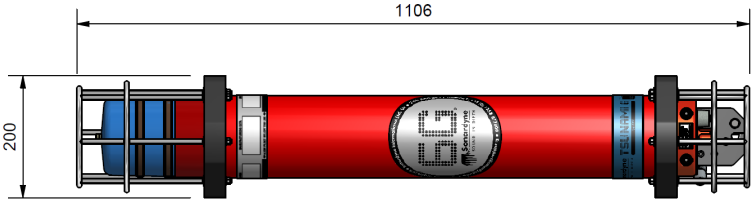
Specifications

6G 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)	196–172 dB (3 levels)
Receive Sensitivity (dB re 1µPa)	95–130dB (6 levels)
Telemetry Wideband 2	100–900 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 (9,600–115,200 baud)
Dimensions (Length x Diameter)	608 x 260 mm
Weight in Air/Water	9.75/5.26 kg
External power requirement	24–50 V dc, 1 W quiescent, 100 W peak
Armoured Cable to buoy payload	Included (10 m, 8-core, with strain relief)

Features	Type 8303 Bottom Pressure Recorder 6
Depth Rating	5,000 metres (4,100 m & 7,000 m option)
Frequency Band	LMF (14–19kHz)
Transducer Beamshape	Directional
Transmit Source Level (dB re 1µPa @ 1m)	202–169 dB (5 Levels)
Receive Sensitivity (dB re1µPa)	80–120 dB (6 Levels)
Telemetry Wideband 2	100–900 baud, user payload, bi-directional
Battery Life (Monitoring)	725 days Standard (1,450 days Max option)
Working Load Limit (Release)	250 kg (4:1)
Dimensions (Length x Diameter)	1106 x 200 mm
Weight In Air/Water	28.2/14.2kg (Standard 5000 m option)
Pressure sensor	4,100 m (7,000 m option)
BPR Floatation collar	Included (nett buoyancy 300 N)