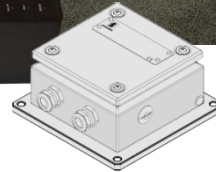
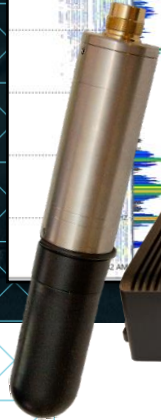
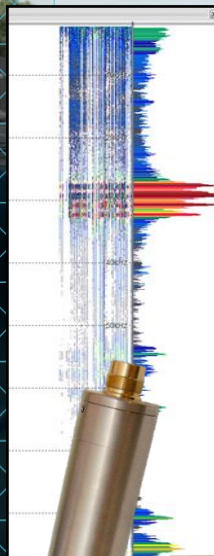


EA440



KONGSBERG

APPLICATION NOTE

EA440

- High performance hydrographic depths from 30 kHz to 500 kHz
- Sidescan sonar application from 100 kHz to 500 kHz
- Sub-bottom profiler application from 10 kHz to 30 kHz
- Available with high power output from 30 kHz to 50 kHz
- Extensive range of transducer interfaces, both Kongsberg transducers and third-party transducers
- Splash proof all-in-one hardware setup available

- CW and FM pulse forms
- True raw data logging
- World class bottom detection

- New map display to track your coverage

EA440 hydrophone application

EA440 is a high performance hydrographic wide band single beam echo sounder. The echo sounder is developed for hydrographic use in shallow to medium depth waters. It also supports portable and hull mounted sidescan sonar and sub-bottom profiling functionality for shallow waters.

As a special application the EA440 software and wideband transceiver may be used for noise monitoring.

EA440 hydrophone application

The EA440 hydrophone application is made possible by using the 10 kHz-500 kHz wideband transceiver (WBT standard) and the EA440 software in combinations with the S4009sci hydrophone transducer. The S4009sci hydrophone is a high-performance, low-noise hydrophone in titanic housing with frequency range from 1 kHz to 90 kHz. A low-noise connection unit (EA TCU) is provided for the interconnection of the hydrophone with the WBT.

The application setup thus allows for monitoring of signals and noise in the frequency range from 10 kHz to 90 kHz. Typical application is monitoring of vessel propeller noise.

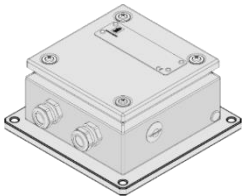
The following system parts are required:

- S4009sci hydrophone
- Hydrophone power
- EA Transceiver Connection Unit with power supply
- Underwater cable
- Wideband Transceiver (WBT standard)
- EA440 software
- Connection cables



The S4009sci hydrophone

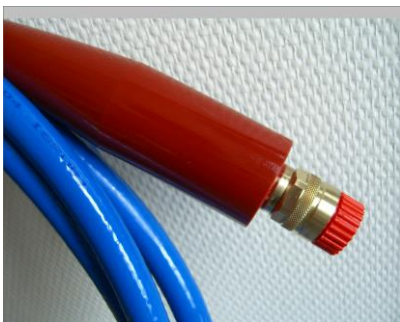
- Supply voltage: 18 to 30 VDC
- Sensitivity referred to output: -157 dB rel 1V/ μ Pa (@1kHz and with high Z load)
- Length: 24 cm
- Diameter: 4,3 cm
- Material in housing: Titanium, grade 2
- Material in connector shell (Souriau): Nickel aluminum bronze
- Insulation material over sensor; Neoprene rubber



The EA Tranceiver Connection Unit necessary to connect the hydrophones with the WBT

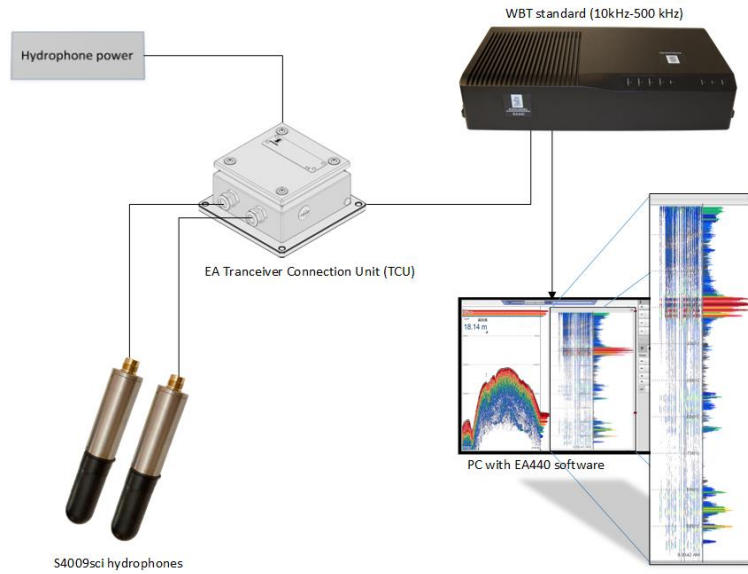


EA440 Wideband transceiver (WBT)



Subsea hydrophone cable
Available in different lengths
(15m, 25m, 35m, 45m or 60m)

System drawing



Noise monitoring

The spectrogram view of the EA440 software is the application that is used to monitor the signal and noise picked up by the hydrophones. The Spectrogram echogram shows a visual representation of the spectrum of frequencies over time. It shows the intensity of the different frequencies.

Below images show examples of registrations made with (1) the 30 kHz multibeam echo sounder EM 304 active and vessel stationary, (2) the EM 304 passive and vessel running at 2 knots, and (3) both EM 304 and vessel engines off.

